The Citrus Industry

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Past--Present--Future

Every business, every calling, every profession, every industry experiences its periods of prosperity and its periods of depression. In this respect, the citrus industry is not different from any other industry. It has experienced its seasons of plenty and its seasons of want.

A score of years ago citrus growers were "sitting on top of the world." Fruit, for the most part, was selling at fancy prices, grove properties were selling at fabulous figures, capitalists were investing their money in acreage tracts and developing new groves, hundreds of vast citrus developments were under way and, apparently, everyone with a few hundred or a few thousand dollars was anxious to invest in citrus properties.

Then came the depression. Citrus prices declined to a point far below the cost of production, grove properties became a drug on the market, many owners of small groves were forced to sell at ruinous prices or permit their groves to deteriorate for lack of proper care. Development of new groves was at a standstill. Weaker members of the industry "got out from under," but the stronger and wiser hung on and where possible increased their holdings with a firm belief in the future of the industry. This period witnessed the consolidation of many small properties and the application of new and scientific methods of grove practices, management and control.

That the faith of these owners in the soundness of their investment was fully justified has been demonstrated. During the past two seasons, and particularly in the season just closed, citrus growers have enjoyed a period of prosperity which has gone far toward wiping out the losses of the depression era. In spite of many handicaps, price ceilings, scarcity of labor, curtailment of grove machinery and supplies, transportation difficulties, increased taxes and whatnot, citrus growers have experienced one of the best seasons in recent years and many of them have been able to discard their bottles of red ink and get their accounts all in black. Grove properties are no longer a drug on the market, but are being bought up by far-seeing investors at prices which spell a profit to the original developers. New plantings are being made and old, run-down groves are being rejuvenated.

Increased purchasing power, due to war-time prices in war-time production plants, extensive federal purchases of citrus fruits, juices and concentrates for use of our armed forces and those of our allies and a growing knowledge of the health-giving qualities of citrus fruits have all played a part in this change in the citrus picture.

The present situation of the citrus grower is favorable, and doubtless will continue favorable for the duration of the war. But what about the future?

With the cessation of hostilities and the disarmament of many of our armed forces, the curtailment of Federal purchases and the readjustment of our industrial life, certain sources of demand will be lessened. It will then be up to the growers and to grower organizations to step into the picture and by their own initiative maintain the present demand and to create new sources of consumption for the increased production of new groves not yet in full bearing. The government cannot be counted upon as an unlimited source of demand in peacetime. The solution of post-war problems rests with the growers themselves.

These problems will call for the considered attention of the best minds in the industry. Florida growers alone cannot successfully solve the problems, although they can do much to achieve that purpose; nor can the growers of California, or of Texas, or of Arizona alone bring about the achievement of the desired conditions. The co-operation of the growers of all citrus producing areas will be required. It will be necessary to minimize local jealousies and emphasize the importance of citrus as citrus. This does not mean the elimination of trade names nor the doing away of any advantage which may accrue to the growers of fruit in any particular locality. The advertising of the Florida Citrus Commission stresses no particular trade name nor brand, but confines itself to stressing the merits of Florida citrus. Why not a national organization to proclaim the merits of citrus fruits and to bring home to the ultimate consumer the importance of regular inclusion of citrus fruits in the national diet?

This, of course, is but one of the problems which must be solved if citrus are to maintain their present satisfaction. Problems of production, marketing, distribution will require attention, and believe that they may best be solved by action of growers of the four citrus of the nation. Already steps in that direction. They should conclusion, and the citrus play an important part

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Difficulties of Inspection For Plant Pests Under War-Time Conditions . . .

By ARTHUR C. BROWN
Quarantine Inspector State Plant Board,
At Meeting Florida State Horticultural Society

Ten pounds of cottonseed from the French Sudan; cotton linters from India; pineapples from Africa; grapefruit and oranges from Trinidad; pears, mangoes, and oranges from Brazil; oranges and apples from Panama; apples from the Netherlands West Indies; all of this material was confiscated during the course of one morning's activities of the State Plant Board's quarantine inspectors stationed at a port in Florida, from baggage carried on seven airplanes, out of twenty-three foreign planes arriving that day.

This place is the terminus for airplane traffic — service and commercial — from the West Indies, Central and South America, Africa, Asia, and all points south and east. (In spite of the added pest risk, we hope that arrivals from Europe will commence shortly.) During the month of April of this year, our inspectors surpervised the arrival of baggage and cargo carried by 752 foreign planes — an average of twenty-five a day. That there is a decided risk of entry of foreign plant pests as a result of this traffic is indicated by the fact that fruit fly larvae **(Anastrepha spp.)** from Guatemala, Colombia, Jamica, and Puerto Rico; **Ceratitis** sp., a close friend of the Medeterranean fruit fly from Africa; pink bollworm from Trinidad; a destructive sweet potato weevil from the Barbados, and other pests have been intercepted on material transported by airplane. In addition, 342 watercraft from foreign countries were boarded and inspected.

Some planes carry large numbers of passengers, many of them youngsters with all of the youth's penchant for collecting food and souvenirs of all kinds to take back to the home folks. Other planes carry diplomats and high ranking officials of foreign countries. These people are accustomed to the nice things of life, and it is not uncommon for them to have fresh fruits and flowers in their possession They are exempt from compliance with Customs regulations, but not with plant quarantines. You can readily see that this rather complicates the work of our inspectors. A hasty action or poorly chosen word on the part of the inspector could cause serious trouble. However, our inspectors are men of exceptionally high calibre, fully capable of handling difficult situations in a diplomatic manner.

We are not particularly concerned over the entry of plants or plant products carried by commercial watercraft or aircraft or members of the diplomatic corps arriving at our ports. Commercial transportation companies must comply with Customs regulations, and in Florida there is a very close spirit of cooperation between Customs and Plant Board inspectors. Representatives of the diplomatic corps are usually well informed individuals who readily appreciate the need for pest control regulations.

Our greatest menace, in so far as entry of foreign pests on plants and plant products is concerned, is presented by the aircraft operated by our armed forces. The number of planes in operation, the personnel of flight and ground crews, and the area served by them, are increasing daily. And along with this constant increase in personnel and number of operations comes an increase in the risk of entry of foreign plant pests.

The need for compliance with plant quarantine regulations on the part of our armed forces is well recognized by the Secretaries of War and the Navy, who have issued orders directing the personnel of the respective services to comply with all the provisions of the fed-

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Studies Of Boron Deficiency In Grapefruit[1/]

By F. E. GARDNER, Principal Pomologist, Bureau of Plant Industry, At Meeting of Florida State Horticultural Society

The necessity for boron to the growth of citrus trees has been established by Haas (3), and some of the physiological and anatomical changes produced by a severe deficiency of the element have been described by Haas and Klotz (4).

Camp (2) has described symptoms of boron deficiency in grapefruit groves in Florida. Among these symptoms are corkiness of the veins of the leaves and hard, raised areas on the fruit which, when cut, shows brown discolored regions in the albedo. Excessive and premature fruit drop also occurs when the defiency exists. Morris (6) has described boron deficiency symptoms in citrus in Rhodesia, which consisted of curling of the leaves, and gum deposits in the albedo and axis of the fruit.

The experimental results reported herein are intended to supplement existing information on the symptoms of boron deficiency of grapefruit so as to facilitate its recognition in the grove, and to discuss the influence of rootstock and also of arsenic applications upon boron uptake and deficiency within the tree.

Experimental

Twelve Duncan grapefruit trees of 1½ to 2 inch caliper, on sour orange stock, were carefully dug and the roots washed free of adhering soil and pruned sufficiently to enable them to fit into eight-gallon earthenware crocks, which were then filled with coarse builder's sand. The trees were watered daily until well established.

Two months after being placed in the crocks, the trees were divided into two lots of six trees. Both lots were supplied three times per week with one liter of a nutrient solution of composition shown in table I. In addition one of the six-tree lots also received boric acid in the nutrient solution to furnish 0.5 parts per million of boron. Analysis of the water supplied to the trees showed it to contain 0.0005 parts per million of boron.

The pots were flushed periodically with several liters of water. Samples of leaves were collected and their boron content determined at appropriate intervals by the colorimetric method of Berger and Truog (1).

Table 1. Composition of nutrient solution used in boron experiment

Ion	Concentration p.p.m.
NO3	718
PO4	216
K	250
Mg	54
Ca	159
Fe	1.0
Cu, Mn, Zn, each	0.4
pH, adjusted with HC1	4.50

These treatments were continued throughout an entire year, during which time a crop of fruit set and matured on the trees.

Results

A good bloom was evident on all trees in early March. Small fruits on the control trees receiving boron developed a deep rich green color which persisted until the normal yellowing indicative of maturity. The majority of the fruit on the boron deficient trees never attained a deep green shade, but remained greenish yellow and mostly dropped before attaining a size of one inch in diameter. Fruit cut from boron-deficient trees at all stages of maturity showed boron discolorations in the albedo and were usually misshapen and dwarfed in size. Only a small percentage of fruit from the boron deficient trees reached maturity, and when cut these fruits invariably had the characteristic brown stains in the albedo. No gum was noticed around the axis of the fruit as described by Morris.

After the immature fruits had dropped, the receptacle remaining on the stem attached to the tree usually exuded a drop of clear brownish gum, which crystallized, effectually sealing the open end of the vascular tubes. This seal prevented the stem from drying as rapidly as is usual after normal fruit drop.

The most notable leaf symptom characteristic of the deficiency was a curling, usually upward, of the leaf tip, accompanied by a wrinkling of the entire leaf surface. This deformity was accompanied by a thickening of the midrib and veins, which became more prounced as the leaf aged. Old leaves showed some corking of the midrib usually on the dorsal surface, followed shortly by an excessive shedding of such leaves. In a number of cases all of the leaves from an entire twig were shed. This was followed by a dying back of the twig, somewhat similar to the dying-back characteristic of copper deficiency.

Table 2 lists the boron content of the leaves at various times during the course of the experiment. As far as possible, leaves from the same flush of growth were collected throughout the sampling period. It will be noted that the boron content of the normal leaves progressively increases with the increasing age of the leaf. The data suggest that the boron which occurs in the leaf tissue is fixed there in an immobile form, accumulating throughout the life of the leaf. It is probable, therefore, that there is little, if any, cross transfer of boron from the leaf to the fruit, thus making the boron content of the fruit always dependent on a constant withdrawal of this element from the soil solution, and necessitating a constant source of soluble boron in the soil for production of normal fruit. Analyses of leaves from grapefruit trees bearing fruit with "lumpy rind" and gum deposits in the albedo sometimes show what might be considered an adequate normal boron content. However, if the boron had been available from nutritional sprays containing the element during a part of the development of the leaf, but not during later fruit development, it would be possible for a deficiency of the element to exist in the fruit, which would not be reflected or determined by leaf analysis. The results obtained with additions of soluble arsenic, which follow immediately, indicate that the boron content of the leaf is not entirely a criterion of sufficiency of the element.

Effect on boron deficiency symptoms or arsenic added to the soil.

The use of arsenic in sprays to hasten maturity of fruit is quite common practice in Florida. Accord-

1/ Author: Wallace R. Roy, associate biochemist, Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture.

ingly, it was decided to attempt to determine if there was any correlation between "lumpy rind" and arsenic application. It has been reported by Miller (5), who sprayed the soil under orange and grapefruit trees with large amounts of arsenicals for an extended period of time, that no apparent harm resulted from the applications.

As a continuation of the experiment described in the foregoing pages, it seemed desirable to determine the effect of various amounts of soluble arsenic on grapefruit trees that were normal with respect to boron content, and on trees that were definitely boron-deficient. The schedule and rate of application of nutrient solution were continued as before. A soluble form or arsenic (sodium arsenate) was added to the nutrient solution at the rate of 10, 50, 200, and 800 parts per million, respectively. Each level was used on a boron-deficient and on a each lot was reserved as a control boron-sufficient tree. One tree from and received no arsenical. The arsenic treatments were begun in January and terminated in May, at which time total and soluble boron and total arsenic determinations were made on the leaves from each tree.

Table 2. Boron content of grapefruit leaves from normal and boron-deficient trees at various stages of maturity

Date	Normal	Boron-deficient
	Boron p.p.m.	Boron p.p.m.
Fel 11*	37	32
April 18 — new growth	33	9
May 22	58	5
June 15	54	6
Sept. 14	66	9.5
Sept. 14 — new growth	36	6.2
Nov. 12	100.8	11.2
Nov.12, same growth as Sept.14 sample	64	8.2

*Before differential treatments

Table 4. Arsenic and total and soluble boron content of leaves from grapefruit trees receiving varying quantities of arsenic and boron

Treatment	Arsenic	Boron	
		Total	Soluble
	p.p.m	p.p.m.	p.p.m.
0.5 p.p.m. boron, no arsenic	2	77	63
0.5 p.p.m. boron, 10 p.p.m. arsenic	16	85	63
0.5 p.p.m. boron, 50 p.p.m. arsenic	49	70	57
0.5 p.p.m. boron, 200 p.p.m. arsenic	83	66	46
0.5 p.p.m. boron, 800 p.p.m. arsenic	116	75	51
No boron, no arsenic	3	18	11
No boron, 10 p.p.m. arsenic	23	12	5
No boron, 50 p.p.m. arsenic	55	18	13
No boron, 200 p.p.m. arsenic	49	14	3
No. boron, 800 p.p.m. arsenic	48	16	3

Both trees receiving 800 parts per million of arsenic, after two months' application, began to defoliate, and at the expiration of the experiment only a few leaves were available for analysis. Very few fruits remained on these trees. After three months some defoliation was apparent on both the boron-deficient and boron-fed tree receiving arsenic at the 200 p.p.m level. At the termination of the experiment there was no marked leaf shedding noticeable on the trees receiving the smaller applications of arsenic.

In May, fruit collected from the trees receiving boron, as well as from the trees that did not, at the 800 and 200 parts per million levels of arsenic dosage showed very definite symptoms characteristic of boron deficiency The fruits were yellowish-green in color and contained brown stains in the albedo.

The arsenic and total and soluble boron content of the leaves from the various trees is presented in table 4. It is obvious that there is a marked intake of arsenic by the trees at the various application levels. It is also apparent that the leaves from trees receiving boron and arsenic contained an apparently normal amount of boron and that therefore the addition of arsenic did not decrease the uptake of boron by the tree. With respect to the soluble boron in the foliage the data indicate that although there might be some decrease in amount due to application of high levels of soluble arsenic to the soil, it is not to such an extent that the apparent deficiency can be attributed to it directly. The hypothesis can be advanced that boron may function in the plant as a part of an enzyme molecule which is necessary for normal plant metabolism, and that arsenic interferes with the enzyme action. Symptoms of boron deficiency would result whether due to insufficient boron for synthesis of the enzyme, or to the presence of some inactivating agent which prevented the functioning of the synthesized enzyme.

(Concluded next issue)

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Effect Of Cover Crops On Citrus Trees

BY J. R. WATSON
ENTOMOLOGIST, FLORIDA EXPERIMENT STATION

With the good rains we have been receiving over most of the citrus belt and with the opening of the summer rainy season, many growers, especially those equipped with an irrigation system so that they can apply water if a dry spell should come, are planning to cease the cultivation of their crops and let the summer cover crop take possession of the soil.

Much has been said about the beneficial effects upon the soil fertility of a cover crop. Perhaps not as much about the effect of a good cover crop upon the insect pests of citrus. Out citrus growers are all well acquainted with the great help they receive from the entomogenous fungi, those fungi which live upon and destroy some of our most important insect pests of citrus, especially scale insects, whiteflies and rust mites. We all know that these fungi flourish best during the warm, moist, rainy season. It is evident, therefore, that anything that has a tendency to increase the humidity in a citrus grove will have a tendency to favor the development of these fungi. This effect has been particularly noticeable in the case of rust mites. In groves with a good cover crop rust mites are uniformly less troublesome than in groves otherwise similarly situated, and handled, but without a cover crop. Indeed, some groves in Florida in low hammock regions which are never plowed or cultivated and with good moisture conditions are seldom much troubled with rust mites. The cover crop aids the development of these fungi in at least two ways. Probably most important is that it precents the reflection of the sun's rays from the surface of the soil. One needs only to go out into a clean cultivated field any sunshiny day at this season of the year to appreciate the glare of the light and heat from a bare soil. Indeed, the sand in such groves gets so hot as to be uncomfortable to the bare hand. The humidity of the air bears an inverse ration to the temperature, that is, as you heat air it becomes drier since warm air has a greated capacity for absorbing moisture than cold air, so a good cover crop by diminishing the reflection of heat from the surface of the ground, particularly sandy soil on which so many of our citrus groves are planted, raises the relative humidity in the groves and makes conditions more favorable for entomogenous fungi to do their work. Furthermore, the cover crop gives off in the process of its growth a considerable amount of water. This also helps to raise the humidity of the air in the grove so that a good cover crop is an important means of controlling scale insects and whiteflies and especially rust mites. Mealybugs and aphids are also liable to be attacked by entomogenous fungi. Another way in which a good cover crop keeps down scale insects is by diminishing the amount of dust flying in a grove on a windy day or behind a tractor. Recent researches have emphasized the effect a deposit of dust has on the increase of scale insects. With the powerful and speedy tractors now in use in our groves this is probably serious.

Now in regard to which cover crop is best for this purpose, it is evident that the one which covers the ground most complete is most beneficial. One which grows tall and makes a dense shade such as the crotalarias would be especially beneficial in this regard. Of course on soils where other cover crops make better growth than crotalarias, they would encourage entomogenous fungi and as a check on dust.

A cover crop may also attract enemies of citrus insects. An example is aphids. Many grasses, especially crab grass, in the spring are apt to be attacked by aphids. These are not the same aphids which attack citrus, not the green citrus aphid, the melon aphid nor the brown citrus aphid, but these aphids on grasses attract enemies of all aphids, especially ladybeetles and syrphus flies and these insects increasing in large numbers in the grove will help just that much in keeping down an attack of the citrus aphid. Many of the plants that compose the cover crop are apt to be attacked by aphids. These in turn will attract ladybeetles and syrphid flies and other predators of aphids which when they have cleaned up the aphids on the cover crop will migrate to the trees and feed upon the citrus aphids.

Crotalaria striati is the most important summer and fall food, and often winter food as well, of the Chinese ladybeetle, which has done such excellent work in controlling aphids in Oranke County.

An important qualification for any cover crop is that it should nto breed insects which are liable to attack citrus. The only insects which are liable to breed on our common cover crops which are dangerous to citrus are the plant bugs, of which there are several species. Most common and injurious is the southern stink pug, often called "pumpkin bug." The next most dangerous one, especially on thin skinned varieties such as satusmas and tangerions is the leef-footed plant bug, a brown insect with a yellow band across its wings .Pumpkin bugs have been less numerous than usual in the peninsul part of the state during the past two or three years, but on the other hand, have been especially abundant in West Florida. This scarcity in the southern part of the state has apparently been due to a high percentage of parasitization during the previous years by the feather legged fly, the very efrective parasite of these bugs.

These bugs breed in greatest abundance on legumes. Of the common legumes planted in citrus groves for a cover crop their first preference is cowpeas, followed by beggarweed, crotalaria striata, velvet beans, and crotalaria spectabilis. As

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long as there are plenty of these cover crops in the grove in good, succulent condition the bugs are not likely to go to the citrus. It is only when something happens to make the cover crop no longer attractive that they move on to the citrus fruit.

In the case of the crotalarias they do not care much for the leaves and stems of these plants; it is the young pods from which they suck the sap which attracts them and anything that takes the young pods off, such as a high wind, is liable to drive them to citrus. The bigs, themselves, if they get sufficiently abundant may take all the pods off crotalaria striata. Then they will move on to the citrus. As these cover crops die down with the approach of the dry weather of the fall there is a continual migration to the citrus fruits, particularly if the latter are approaching maturity.

The bugs prefer not only mature fruit, but also those varieties with a thin rind. Satsumas are the first to be damaged in the fall. Tangerines later on are a great favorite, followed by Hamlin, Parson Browns, Pineapples, and seedling oranges. Valencia oranges and grapefruit seldom suffer severely. The fruit, if punctured often enough by these bugs, will drop from the trees. Even those that do not drop are liable to decay in transit, as the punctures of the bugs make convenient avenues of access for various fungus diseases, so that a punctured fruit is usually a total loss. Punctured fruit is also dry and of poor flavor.

This does not mean that we should avoid these very desirable legumes as cover crops in our groves, but does mean that we should be on the lookout for these bugs and take precautions against them. The crotalarias do not breed these bugs in large numbers until they begin to produce pods. Crotalaria striata produces pods in the early summer and continues to produce them in increasing numbers until cut or killed by frost, thus giving the plant bugs a continual food supply. The pods of crotalaria spectabilis are just as attractive as those of striata, but this plant does not ordinarily produce large numbers of pods until early fall — September. It then sets a very large crop which quickly ripens and the plants die. In other words, the pods are present on the plants such a short time that the plant bugs do not have time to breed up to large numbers. We have never had any trouble with these bugs where we have had a pure stand of spectabilis. But spectabilis does not grow well in some of the drier soils of our citrus groves. In such soils crotalaria striata can be grown but it should be watched. To be perfectly safe, it should be mown when it begins to blossom. If not allowed to produce pods, it will not breed plant bugs in large numbers. Of course this would necessitate reseeding the grove each year, but often it will not be necessary to cut this striata. Stink bugs, like other insects, have their enemies which often hold them in control so that a crop of crotalaria striata ,cowpeas, or beggarweed does not necessarily mean a heavy infestation of pumpkin bugs, but it should be watched.

If by the middle of September there is a considerable number of these bugs on the cover crop, it should be mown. In the case of a tangerine grove, this mowing should not be later than the first of September, and in the case of satsumas the middle of August. These bugs will breed on the stems of cowpeas and beggarweeds as well as on the pods.

It is very important that these cover crops should not be mixed in a grove. In other words, avoid having a continual food supply for these bugs throughout the summer.

Avoid mixing cover crops which will breed pumpkin bugs in the first

(Continued on Page 14)

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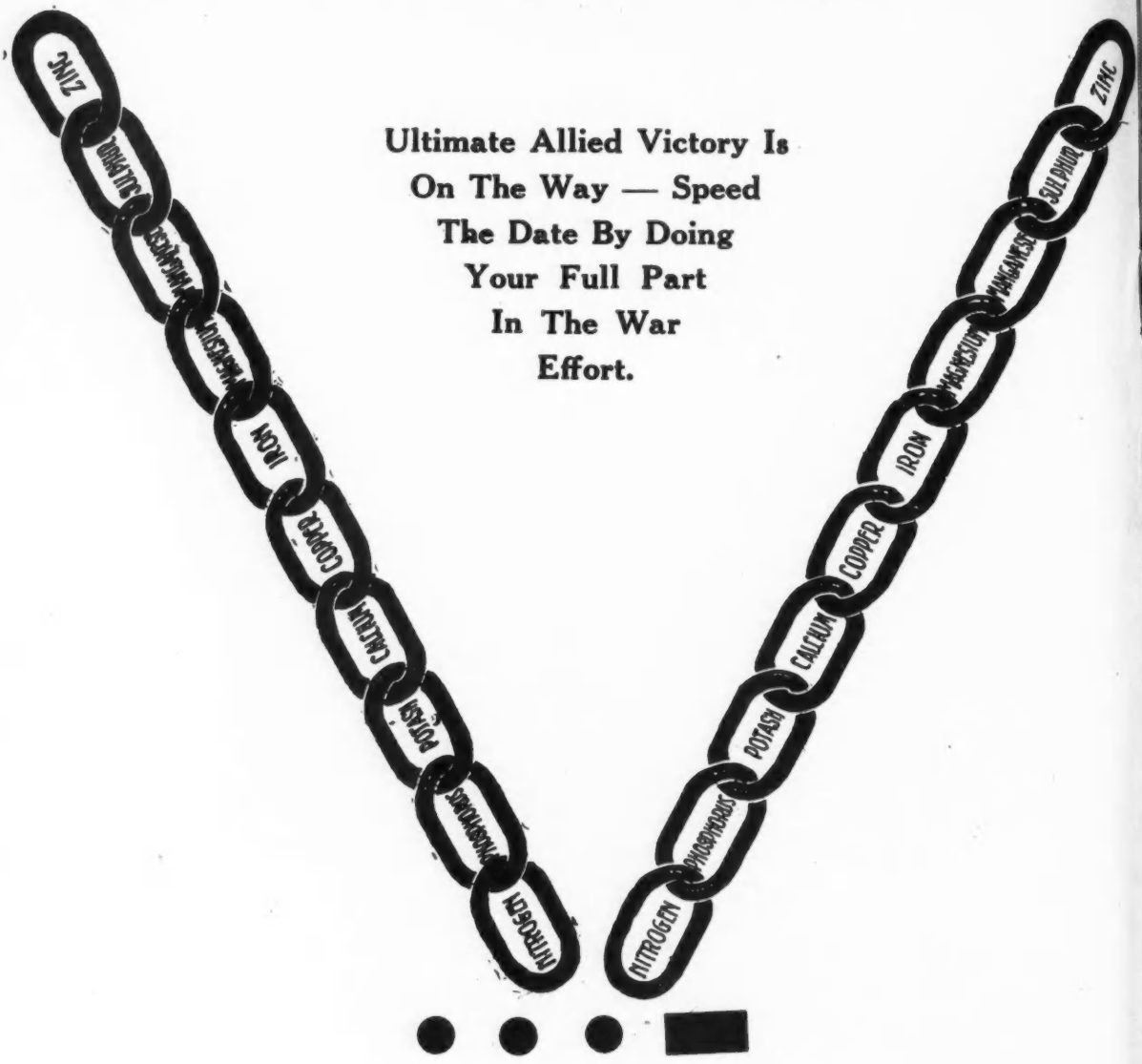

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DIFFICULTIES OF INSPECTION FOR PLANT PESTS UNDER WAR-TIME CONDITIONS

(Continued from Page 3)

eral plant quarantines. Commanding officers of surface craft are required to notify the nearest plant quarantine inspector upon arrival and provide for the inspection of such plants and plant products as may be on board. As to aircraft, these orders go as far as to prohibit the transportation of plants and plant products by service aircraft unless a permit has been secured from the U. S. Department of Agriculture. Army and Navy officers who are familiar with these orders are usually willing to cooperate with the plant quarantine inspectors. However, for every officer in this group there are a hundred, perhaps more, uninformed newcomers

Unfortunately, commanding officers of aircraft or airfields are not required to notify the quarantine inspectors of the arrival of planes from foreign points. They are required, however, to advise the Customs inspectors of such arrivals. At several of the largest fields where there is a considerable amount of foreign air traffic, the Customs are so notified and our inspectors are enabled to take care of any plant material that may be transported. At another field, Navy officers contact our inspector by phone when there is a foreign arrival and advise him whether or not plant material is aboard. At other fields cooperation on the part of officers in charge is less enthusiastic, or even non-existent. We have no way of knowing the volume of the foreign traffic at these fields, and it is possible that the officers in charge are willing to cooperate, but have nothing to report. Again, it is possible that the need for secrecy with respect to the movement and equipment of planes may be regarded as of more importance than compliance with plant quarantine regulations.

We are rather disturbed with respect to the situation that exists at one airfield where we have reason to believe that there are a considerable number of foreign arrivals. Attempts over a period of months to secure information as to the movement of plant material have been unsuccessful. Officers in charge are cordial and sympathetic in interviews, and assurance is given that full cooperation will be forthcoming. And that is as far as we get. As the result of a recent conference held in Washington, it is hoped that this situation will be improved.

Army and Navy officers at times attempt to minimize the need for cooperation by stating that plants and plant products are not carried on service planes. We have ample evidence to the contrary. Two incidents will be cited: (1) Inspection of a crate marked "Government Property" unloaded from an airplane at a Florida airfield disclosed the presence of a large stem of bananas consigned by a soldier in a foreign country to a friend in the States; (2) a moving picture actress holding the rank of Captain in the Army, recently arrived by Army plane from Africa with a large box of oranges, some of which were infested with fruit fly larvae.

Another possible means of entry of plant pests is through plant material transported by service planes which proceed directly to an interior airport where Customs and plant quarantine inspectors are not located. We have no means of ascertaining the volume of such flights. We do know that such landings have been made. At times poor visibility or stormy weather forces the planes out of their courses and they may land anywhere. Fruits infested with fruit flies and discarded after arrival at an interior airfield located in the center of our citrus industry could result in the establishment of a destructive pest.

Another difficult problem is the supervision of parcel post packages containing plants sent by service men stationed in foreign countries. The tremendous increase of foreign mail plus the manpower shortage on the part of the post office and other old established governmental agencies is again responsible for a slackening in the enforcement of customary regulations. Ordinarily mail from foreign countries would come through the established channels of the International Postal Service, but this is not always the case with service mail. Officials of the Post Office Department have informed representatives of the Army and Navy that if they will get the mail to the continental United States the Post Office Department will see that it is delivered. Packages offered for mailing by service men are examined at point of origin by Army and Navy censors and if found in accordance with their own regulations are forwarded to the States by first available means of transportation. If arrival is at a port of entry, it is customary to refer the packages to the Customs for examination. Any plant material observed would be referred to the plant quarantine inspector. If, however, arrival is at an interior point where Customs inspectors are not available, the packages may be delivered direct to addressees.

You can readily see the menace presented by this practice. Among the large number of service men now on overseas duty, there are some who are interested in horticulture and agriculture. A new and interesting plant observed would likely direct their thoughts to the desirability of growing such specimens at their homes in the States. Florida boys familiar with citrus and other subtropical fruits are likely to encounter interesting varieties that they think would flourish on their home grounds. Specimens may be collected, and airplanes afford a means of transportation direct from the foreign field to one located in Florida that insures their arrival in good condition — along with any destructive insects or diseases that may be present. Again, there may be some unscrupulous individuals in the armed forces abroad, fully familiar with the federal plant quarantine regulations, who would use this means to circumvent the restrictions imposed by the plant quarantine regulations.

The risk of entry of foreign

PLEASE
THE TELEPHONE
is a vital war weapon.
For the duration please
follow these helpful suggestions:
USE DIRECTORY
Be sure you have right number. Check with directory. Call information only as last resort.
DIAL CAREFULLY
Most wrong numbers are due to careless dialing. They waste time and facilities. Dial slowly.
TALK BRIEFLY
Telephone circuits are limited. Calls essential to the war may be waiting for you to get through.
LONG DISTANCE
Long distance lines are overloaded. Use only when calls are essential.
YOU Can Help Us and Help Uncle Sam
PENINSULAR TELEPHONE COMPANY

plant pests by means of service mail and the need for the issuance of orders restricting the mailing of plants and plant products was first brought to the attention of War and Navy Department officials about a year ago. Yet it was not until March 15, 1943, that the necessary Army orders were issued. To date we have not been advised of similar action on the part of the Navy. You may be interested to learn that a recent incident which took place in Florida whereby plants shipped from Brazil were permitted by the Navy censor to proceed directly to the addressee without passing through the hands of the plant quarantine inspectors is being used by the Bureau officials to reopen the subject of the Navy's cooperation. Incidentally the plants mentioned, although apparently free from insect pests or diseases, have been destroyed.

The total number of parcels of fruits and vegetables and other plant products arriving by watercraft passing under the scrutiny of our inspectors has almost doubled. It is estimated that by the end of the present fiscal year the number will be approximately 10,000,000, as compared to 5,000,000 last year. A large increase in the entry of bananas accounts for a considerable portion of this increased trade. The submarine menace forced vessels to use the shortest and mot protected routes between the United States and countries to the south. This made necessary the discharge at Florida ports or cargoes such as cocoa beans and divi-divi pods, the latter used in the manufacture of leather goods, formerly unloaded elsewhere. Several commodities, such as cotton, in the past restricted to entry at northern ports on account of the pest risk involved, are now permitted entry, under certain safeguards at southern ports. These safeguards, such as fumigation and special handling, reduce but do not eliminate the pest risk.

And, finally, there is the ever present menace presented by flotsam and jetsam, particularly the former. Vessels attacked by torpedoes or gunfire generally sink, but their cargoes may float out of the holds and eventually drift ashore. This office has received several reports of fresh fruits and vegetables, bales of cotton, and other commodities found washed ashore at various points along our extensive coast lines. It is admitted that submersion in salt water for any considerable length of time is likely to be fatal

(Continued on Page 14)

It's Sound Strategy To Plan Ahead

That's how our Army and Navy are winning victories. That's how the victories of p r o d u c t i o n can also be achieved.

The problems of labor, transportation, and supply are all difficult during the war emergency. Under present circumstances, Florida growers will profit greatly by long time planning.

We invite you to consult with us early concerning your fertilizer plans and problems.

X-Cel Fertilizers

X-Cel Service

Tennessee Basic Slag

Jackson Grain Company

Our 34th Year

Tampa Florida

Valuable premium coupons are packed in every bag of X-CEL products

ADVERTISEMENT—LYONS FERTILIZER COMPANY

The LYONIZER

Department

COMPILED BY THE LYONS FERTILIZER CO.

Reports of Lyons Field Men . . .

POLK & HIGHLANDS COUNTIES

J. M. (Jim) Sample

This section, like all others, has been getting plenty of rain with individual rains exceeding three inches at times. As a result, the trees are putting on a late July and August growth in many cases and cover crops are doing well. The crop of fruit seems to be heavier in this area than was at first anticipated, particularly in the case of seeded grapefruit. The tangerine crop is light but some bloom is showing up on the growth that is now making an appearance. The orange crop and marsh seedless grapefruit seems to be about normal and if any remark is to be made about the Valencia crop we would say that it is probably a little shy of last year. Oil sprays are now being applied for scale control. Rust mite are being controlled by sulphur dust.

WEST CENTRAL FLORIDA

E. A. (Mac) McCartney

There has been plenty of rain in this section and groves are looking fine. The fertilizer application is over and groves on the whole are looking to be in fine shape. Most groves are being sprayed at this time with oil to control scale insects and quite a bit of pruning is also being done. While vegetable growers throughout this territory are 100% in favor of doing their best to assist in the war effort they are very frankly at a loss to understand some of the rulings made by the federal authorities. There are many crops on the MUST list as far as essential crops are concerned, and without exception growers have tried to plant these crops but at market time they are finding that they are not having the wholehearted cooperation of these authorities for in many instances minor crops are selling at higher prices than those classed as essential by the powers-that-be.

SOUTHWEST FLORIDA

F. W. (Felton) Scott

Recent heavy rains in the Manatee area has proven both beneficial and helpful. In many cases we have lost a considerable part of soluble nitrogen applied to groves and we are contemplating a supplemental application of fertilizer. While on the other hand we are building up a reserve of moisture that will be of much value in months to come. Fruit is beginning to size up very nicely but even with a late bloom we are going to have a very short crop of common grapefruit. Vegetable growers are beginning to prepare their land for seed beds to take care of the fall crop. Indications are that we will have a normal planting of the usual crops with tomatoes, eggplant, celery and peppers as the predominating plantings.

NORTH CENTRAL FLORIDA

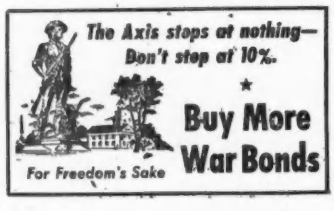
V. E. (Val) Bourland

We are having a great deal of trouble with rust mites at this time and while they are generally being brought under control it is satisfying to note that they are not as malicious as last year. Scale insects are causing a great deal of trouble but we are rapidly bringing them under control with oil sprays. All of the packing houses have closed for the season and are now busy with cleaning up operations. The fruit crop now on the trees is sizing up well and every indication is that we will have a normal crop. Cover crops are making a very nice growth and within the next few weeks most growers will start cutting these crops and allow them to make a second growth for the seed crop.

HILLSBOROUGH & PINELLAS COUNTIES

C. S. (Charlie) Little

We have been talking for the past couple of months about the light crop of grapefruit in this section. Nothing to date has happened to change our minds about this crop. We are having some scattering late bloom but not in sufficient quantity to really have an effect on the total crop. Our orange crop is good and the quality is looking good. It is now very apparent that those groves that have been receiving ample quantities of secondary plant foods are in better condition with a more abundant fruit crop than those that have not received these secondary elements. We have definitely come to the conclusion that the minor elements are a MUST on the list of essentials as far as greater quantities of quality fruit is concerned. Rainfall has been abundant recently and we have certainly profited from this water, but can use a great deal more in building up a reserve for future months.



ADVERTISEMENT—LYONS FERTILIZER COMPANY

To Our Grower Friends Throughout Florida...

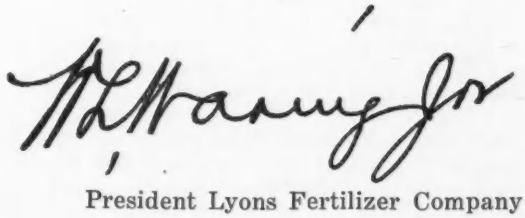
Much has been said and written about inflation, post war planning, the disparity between wages and living costs, high taxes, the conduct of the war and various other topics all of which are the results of war time conditions, but little has been said about the tremendous job which the growers of Florida have done in maintaining a high level of food production under the most adverse circumstances.

So I want to say to our grower friends that it is my opinion that no group of patriotic American citizens has done a more telling job in support of the war than you have done. With labor shortages, material shortages, machinery shortages and transportation difficulties worse than ever before in the history of the industry, you have continued to show increases in food production with each passing season.

It is significant that of the basic seven foods outlined by the government as fundamental in the diet of the nation and the world, Florida growers have done outstanding jobs in the production of two of them — fresh vegetables and citrus fruits.

When this war is won, as we believe it will be shortly, every Florida grower may well say to himself, "I did my full part."

Sincerely yours,



President Lyons Fertilizer Company

DIFFICULTIES OF INSPECTION FOR PLANT PESTS UNDER WAR-TIME CONDITIONS

(Continued from Page 11)

to immature stages of insect pests, but nevertheless this is another illustration of the increased risk of entry of plant pests as a result of the war.

In the past we have regarded our quarantine inspection service as the first line of defense against invasion by plant pests, and the grove and nursery inspection services as secondary lines. But this was has proved that the human enemy can by-pass these supposedly impregnable first lines, and unless the secondary lines are in force disaster is sure to follow. We have indicated some of the ways alien insect enemies can by-pass our quarantine lines. This greatly increases the importance and responsibility of our secondary lines, nursery and grove inspection. We feel that our nursery inspection force is adequate and is giving a good account of itself. We cannot say as much for the grove inspection department. A number of our most promising young inspectors have been lost to the Army and Navy. Replacements are most difficult to obtain. Frequently there is a lapse of several months between the departure of an old inspector and the employment of a new one. Multiply this by eight or ten and you have a considerable period of "absenteeism." A considerable number of man-weeks are devoted to participation in activities other than inspecton of citrus plantings, such as the federal mole cricket control project, when it becomes necessary for a number of our inspectors to supervise the distribution of poinson bait. At times it has been necessary to assign grove inspectors to assist in enforcement of foreign plant quarantine regulations. Our budget provides for employment of thirty-one assistant grove inspectors. Were it possible to keep this number assigned constantly to the inspection of citrus plantings, the entire state could be covered every twenty-four to thirty months. Due to loss of personnel and the need for assigning inspectors to other activities, the present coverage is some two years behind.

In conclusion we will state that the fight to prevent entry of foreign plant pests under war-time conditions changes almost from day to day. About the time one weakness in our line of defense is strengthened, another avenue for the infiltration of plant pests is discovered. Some idea may be formed of the magnitude of the task of closing all gaps, and keeping them closed. when it is stated that this can be accomplished only through the concerted action of representatives of the Secretaries of War, Navy, Agriculture, Treasury, and the Postmaster General. (Let me pause at this point and express the Board's gratification with respect to the cooperation on the part of the Treasury's Customs department in Florida. Without this wonderful support, we would be forced to work under all the gaps in the line of defense a severe handicap.) We hope that will be closed eventually — only time will tell whether or not the repairs were made soon enough.

WAR TRANSPORTATION

(Concluded from last issue)

mileage, eliminating unnecessary mileage and obtaining from the trucks that we have a maximum efficiency. Last year in Washington our officials in studying the different means by which miles, rubber and gasoline could be saved, suggested several plans, one of which was a horizontal cut of mileage of all types of transportation in the whole industry. This plan was discarded at is would have worked a hardship on the efficient operator and would have allowed the inefficient operator to continue without any penalty. Some of our businessmen are operating very efficiently and a horizontal cut would have been disastrous to them. It was finally decided that the Certificate of War Necessity program should be adopted and by this method we could find out which operators were

EFFECT OF COVER CROPS ON CITRUS TREES

(Continued from page 7)

part of the summer with those which will breed them in the latter part of the summer. Herein lines the danger of crotolaria striata. Beggarweed and cowpeas die down to a considerable extent before the citrus is attractive to the stink bugs, but crotalaria striata is liable to carry over the bugs up to the time the citrus is attractive to them. As long as green succulent pods are on the crotalaria the stink bugs will not leave them for citrus. It is only when something happens to the pods; they get ripe or a drought or hurricane strips them from the plants, or when the bugs themselves get so abundant as to take all the pods off is there a migration to the citrus.

In conclusion, a good cover crop in a grove is a great help in controlling insects, and especially, rust mites. The only danger is that some of the legumes may breed plant bugs. These should be watched and if they become heavily infested should be mown before the middle of September in the case of round oranges, the first of September in the case of tangerines and Parson Browns, and the middle of August in the case of Satsumas.

CLASSIFIED Advertisements

The rate for advertisements of this nature is only five cents per word for each insertion. You may count the number of words you have, multiply it by five, and you will have the cost of the advertisement for one insertion. Multiply this by the total number of insertions desired and you will have the total cost. This rate is so low that we cannot charge classified accounts, and would, therefore, appreciate a remittance with order. No advertisement accepted for less than 50 cents.

CITRUS TREES—Best quality usual varieties on sour orange or rough lemon stock. Robt. P. Thornton, c/o Clay Hill Nurseries Co., Box 2880, Tampa, Florida.

PLACE ORDER NOW Fall Delivery Citrus Trees. All Varieties. Paramount Grove Service, Box 843, Lakeland, Fla. 10-6t

LAKE GARFIELD NURSERIES COMPANY
BARTOW, FLORIDA
ALL STANDARD VARIETIES CITRUS TREES—SPECIAL PRICES NOW IN EFFECT

FOR SALE — Block of 7000 Sour Oranges, budded to best varieties. Some buds 12" to 18" high. Will sell reasonable due to labor shortage. Visit nursery south of Lake Ruby. Thompson Nurseries, Route 1, Box 181, Winter Haven, Fla.

NOW BOOKING ORDERS for fall delivery of citrus trees on various root-stocks. Valencias and other varieties on sour orange root for summer planting. Superior trees.
WARD'S NURSERY
Avon Park, Florida

ALYCE CLOVER SEED — Ripe and cleaned. Ideal cover and hay crop. Write for information. P. E. Snyder, Box 866, Lakeland, Fla.

efficient and which were operating inefficiently. In this way reduction in mileage that was and is necessary, amounting to 40 or 50 percent over 1941 mileage, could be handled in such a manner that all operators would be saved.

It is not the purpose of the Divisionsion of Motor Transport to put any operator out of business, but rather it is our purpose to eliminate wasteful mileage and gasoline and try to help you with various conservation plans so that all operators will be kept in business and we shall have transportation throughout the war and until such time after as new equipment can be obtained by you. You people here today know your business better than we. You know where you can make improvements. It is your business to take these matters into consideration and make the improvements necessary. It is an industry problem and we hope you will not allow it to become a Government problem. When your present vehicles are worn out, there will be no replacements. A year ago we had 300,000 new unused trucks in dealers' hands in the United States; today we have less than 50,000. Trucks have been worn out, wrecked and junked at the rate of better than 400,000 per year and today you are faced with the problem of keeping your present vehicles operating.

To tell you some of the facts regarding traffic increases in passengers and commodities — just a week or so ago we secured some figures on city passenger traffic that were startling. Compared to December, 1938, which is considered the last normal month, Detroit local passenger traffic increased 76.9 percent, Washington, D. C., 131 percent, Wilmington, N. C., 522 percent, Charleston, S. C., 622 percent, Atlanta, Ga., 92 percent. Intercity buses throughout the country increased traffic in 1942 over 1941, 80 percent, common carrier intercity trucks increased their ton mileage by ten per cent with approximately a 25 percent cut in mileage driven.

I am not well versed in the transportation or other problems of agriculture or the citrus growers, but still I am not a total stranger to this state or your problems as I was born just a little north of here during the "Big Freeze" days and my people went through the same troubles, trials and tribulations that many of you present today have experienced. I am not unmindful of the problems you have had — my people have been residents of this great state for nearly seventy-five years and I am a Florida Cracker in all its phases. Many stories have I heard about the commission broker's check not paying for the boxes in which the fruit was packed, how the fruit was frozen when it reached the market, how the market was overloaded, and many other sad tales concerning citrus. You never knew what size check, if any, you would get.

Thanks to yous good Society, the citrus exchanges and associations, good roads, trucks, and rail transportation (back in those early days it was water or else), you have surmounted those obstacles, you have created a market by advertising, by association work and by good dependable transportation. You have come a long way.

In this matter of transportation we are faced with many problems. You are fortunate here in Florida to have the services of the State Defense Council's Transportation Committee; you are fortunate in having such an able man at the head of your USDA War Board, Mr. H. G. Clayton, and we in the ODT are fortunate in having the assistance of these men in working out our common problems. We in ODT realize that you had your troubles and difficulties with our Certificates of War Necessity and we are trying to iron out all the troubles but in ironing them out please realize that we must receive your assistance and cooperation.

Your big troubles, of course, are manpower, transportation and equipment, probably in that order. We can't help you with anything but transportation but we believe that our men with your assistance can be of help to you on this problem. You in the agricultural and citrus industry can do much to help transportation by working out joint action or pooling plans, group hauling, eliminate the wasteful of empty mileage of your trucks by arranging with your neighbor to back haul for him if you do not have return loads. Make one truck do the hauling which two formerly did by planning your transportation better.

We have five district offices in this state — Orlando, Tampa, Miami, Jacksonville and Tallahassee — to assist you in any plans you may desire to make. I was in one of our Florida offices two weeks ago and they were discussing with some growers the possibility of pooling and joint action plans among growers, haulers and processors. Oh, I know you will throw up your hands and say, "There are too many angles to that and it would be almost impossible, as packers an dprocessors own groves, or are financing groves and that is their source of supply even though it may be 25, 50 or 100 miles away from their plans." Let's look at this from another angle — a predicament in which I hope you do not find yourself — suppose everyone goes along by himself not considering the waste mileage or any pooling arrangements. Maybe your own trucks will be the first to stop through wrecks or other causes that are beyond your control. Now, if you are playing a lone hand, can you expect your competitors to come to your assistance. Get into these pooling plans and arrangements while you are able, while you can have some of the say-so.

We know that you are working under a strain, that you have too many Government reports, that there are too many restrictions, but you surely can't blame anybody but Hitler, Tojo, Mussolini & Company for that. We know that people are adjusting themselves to wartime conditions and restrictions, that many business men and industries have necessarily been converted or gone out of the picture. Our whole nation is tense but we must keep calm and try to look ahead and meet the troubles before they overtake us. Our ODT men will be glad to assist you in any plans you care to undertake; they will help you prepare the necessary papers for clearance so that there will be no difficulty from the Department of Justice and will work with you and assist you in any way possible.

We in ODT have just been instrumental in forming Industry Maintenance Advisory Committees in our district office cities. The Committees are appointing sub-committees in our other cities. The purpose of these committees and our men working with them is to see that trucks are kept rolling, to assist in locating repair parts, to assist in training programs for transportation men and to make every effort to keep transportation generally in line and on the road.

We in ODT know that you men in your agricultural industry know more about your problems, know the answers better and can do a better job of conservation than any Government group sitting in Washington, Atlanta, or elsewhere, acting alone. This transportation we have today must be preserved for the duration of the war — maybe that will be for only a short while — we hope so — but maybe it will be for a long time.

PUBLIC LIBRARY

Produce MAXIMUM CROPS OF FINEST QUALITY *with* LYONS FERTILIZER

POST SEASON PLANNING

As post-war planning is the theme of many diplomatic circles today, post-season planning is a matter of routine with every successful grower each year. The season just closed was a very satisfactory one but in order that subsequent seasons may continue to be satisfying growers must give consideration to the practices which will keep their groves healthy, hardy and able to produce Maximum Crops of Quality Fruit. For many years our fertilizers have borne the reputation of doing just that job.

We would remind you also, that our staff of Field Service Men is on call whenever you wish consultation concerning any production problem.

LYONS FERTILIZER CO.

TAMPA, FLORIDA

AGENTS CARRYING STOCK

Arnold Feed & Seed Store, Winter Garden
Citrus Service & Supply Co., Tavares
Douglas Hardware Co., Dunedin
E. C. Edge, Dania
John Giddens, Avon Park
A. G. McCauley, St. Petersburg
Guignard Maxcy, Sebring
Noling & Church, Howey-in-the-Hills
John W. Parker, Arcadia
Paramount Grove Service, Lakeland, Fla.
Plant City Seed Co., Plant City
Ruskin Tomato Growers, Inc., Ruskin
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